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WETLINE TECHNIQUE FOR PRESCRIBED BURNING FIRELINES IN RANGELAND

by

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Abstract

Backpack pumps or pickup pumpers and two 4-foot wands attached to a Y can be used to install firelines for prescribed burning in light fuels on rangeland. The technique is inexpensive, effective, and it does not permanently deface the landscape.

KEYWORDS: Fireline construction, firelines, prescribed burning, range management.

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Building firelines for prescribed burning can be expensive, time consuming, and often damaging to the landscape. The technique described here is rapid, low cost, and does not permanently disturb the landscape. It is applicable primarily for range and light shrub fuels and could also be used in fire control activities.

Many prescribed burning projects are not undertaken because of the cost of line construction. Further, conventional line-building techniques cannot be used in some situations; our wetline technique may work well in the same situations.

Our techniques are not necessarily new. A similar technique, using fire retardants and high pressure spraying equipment, has been developed at Wind Cave National Park.[2/] The difference between the two techniques is that we use standard firefighting equipment and plain water and then burn out an adjacent area. The Wind Cave technique can treat more line per volume of liquid and may or may not involve immediate burnout.

The Technique

We have used three variations in developing the technique (fig. 1). Of the three, we prefer the method of two double wetlines (fig. 1C) where

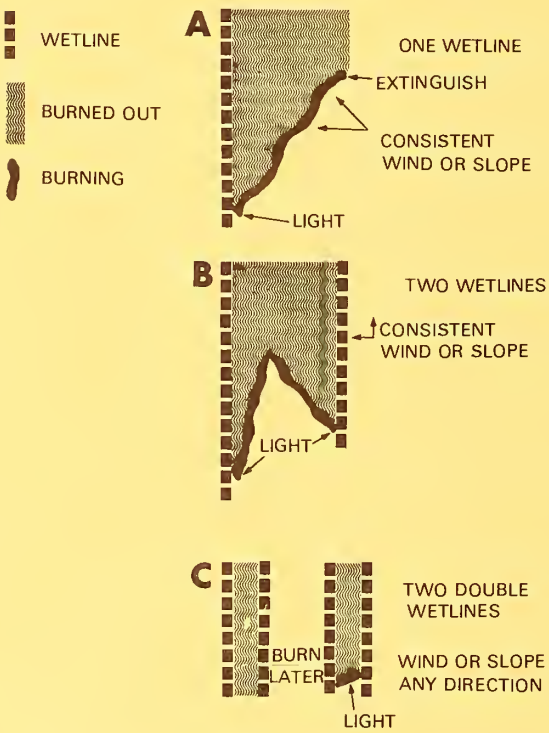

Figure 1.--Three variations of the wetline technique. Wetlines are 1 to 2 feet (0.3 to 0.6 meter) wide. Double wetlines are 6 to 8 feet (1.8 to 2.5 m) apart, and burnout areas generally 20 to 50 feet (6 to 15 m) wide.

[2/] Shilts, D. 1975. Use of chemical fire retardants at Wind Cave National Park. 3 p., mimeogr.

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Figure 2.--Fireline being established by one wetline. The wetline is applied to the left and the fire allowed to back away. The burner is lighting some unburned fuel after the backing fire was extinguished.

vehicle access permits its use. The first variation (fig. 1A and fig. 2) involves backfiring from one wetline. Once a sufficient width of line has burned out, the backfire is extinguished with more water or tools such as fire flaps or rakes. A consistent wind or slope is necessary. We have used the technique only under moderate burning conditions. As can be seen from figure 1A, the fire is not contained on one side and one end, presenting a degree of risk. We have used this method in the evening when strip headfires would burn into the wetline, but the backfire would go out.

The second variation (fig. 1B and fig. 3) involves running two parallel wetlines some distance apart and burning out the fuel between the two lines. The wetlines may be applied with backpack pumps or vehicle-mounted units. We use one burner with each wetline. When wind is from one side of the line, the downwind line should be burned out ahead of the upwind line. Again, consistent winds are necessary. One end of the fire is not contained during burnout.

The method of two double wetlines (fig. 1C) is probably most applicable where terrain permits use of vehicles. Two 4-foot (1.2-m) wands with spray heads are attached to a Y on a single fire hose (fig. 4). At the beginning of a line, the spray equipment is swung back and forth to seal off the end of the line. The vehicle then moves forward, laying two parallel wetlines 1 to 2 feet (0.3-0.6 m) wide and 6 to 8 feet (1.8-2.5 m) apart. The burner follows behind the vehicle, burning out the intervening fuel (fig. 5). A second strip may be burned some distance away, and a wider area between the two strips is then burned out. Wind direction is not critical in this variation. If the fire runs too rapidly toward the

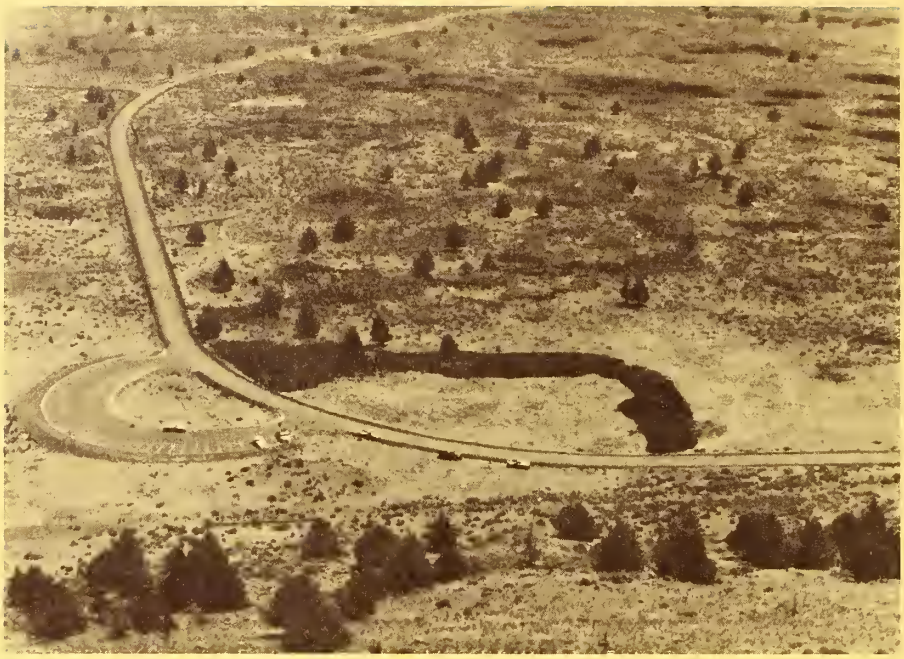

Figure 3.--View of a fireline formed around a small plot by the two-wetline method (fig. 1B). Line width variation resulted from forming line around terrain and fuel concentrations. The parking lot on left is a prime historical location and lines permanently disturbing the landscape would be unacceptable.

Figure 4.--Spray from the double wands on Y has just sealed off end of line; hose was pulled from reel to reach area inaccessible to truck; hose will be reeled in as torch man burns out fuel between double wetlines.

Figure 5.--Truck with pump operator moves through cheatgrass range as torch man burns out intervening fuels.

vehicle, the spray operator can stop the advance by a sidewise movement of the wands.

When it is necessary to install a wetline up to several hundred feet from an area accessible to a vehicle, we pull hose from the reel, then use the reel motor to pull the hose in while the double wands are used to apply the wetline.

Application

We have used only the third variation to develop long wetlines. Using No. 3 sprayer heads with 100 psi pressure at the pump, we built 1.1 miles (1.8 km) of fireline in 25 minutes at a rate of about 2.6 miles (4.2 km) per hour. Approximately 175 gallons (662 liters) of water were used, or about 160 gallons per mile (376 liters/km). We have used the technique in a variety of range burning situations. The lines, however, have generally been short because we utilized terrain and roads for most of the firelines. Burning conditions have ranged from 20 to 35 percent relative humidity, 60 to 80 ^{o}F (15 to 27 ^{o}C) and winds to 10 miles (16 km) per hour.

Limitations

We have used this technique only for burning ranges where no heavy litter and duff are present. Since the water is applied over a very short time period, heavy litter and duff are not wetted deeply. Also, the burnout time for heavy litter and duff is too long for the temporary wetline to contain. Before the prescribed burn is ignited, the burned out line should be tested to be sure fire cannot creep through it.

Undoubtedly the technique could be made more efficient through equipment modification and an evaluation of the amount of water needed. We feel the technique is sufficiently developed, particularly the method of two double wetlines, to be useful to land managers.

With use of this technique, as with any prescribed burning, these steps should be followed:

(1) Weather forecasts and fire agencies should be checked before burning is started.

(2) Firelines should be scouted and marked before line construction is begun.

(3) Burned out wetline should be checked and tested before prescribed burning is started.

(4) Weather should agree with forecast and the prescription.

(5) Adequate backup personnel should be available in case of trouble.

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